WHAT IS CLAIMED IS:

1. A system for bias control of a power amplifier, comprising:

a carrier amplifier coupled to an input stage for amplifying an input signal; and

a peak amplifier coupled to the input stage for amplifying the input signal, the peak amplifier configured to receive a voltage control signal for biasing the peak amplifier, the voltage control signal based on power levels of signals transmitted by a remote base station.

2. The system of claim 1, wherein the carrier amplifier further comprises

a carrier first stage amplifier coupled to the input stage; and

a carrier second stage amplifier coupled to the carrier first stage amplifier and a carrier amplifier output terminal.

3. The system of claim 1, wherein the peak amplifier further comprises

a peak first stage amplifier coupled to the input stage; and

a peak second stage amplifier coupled to the peak first stage amplifier and a peak amplifier output terminal; and

a voltage control unit coupled to the peak second stage amplifier, the voltage control unit configured to bias the peak amplifier via the received voltage control signal.

4. The system of claim 3, wherein the voltage control unit biases the peak amplifier as a class B or a class C amplifier based upon a state of the received voltage control signal.

5. The system of claim 3, wherein the voltage control unit biases the peak amplifier as a class AB amplifier based upon a state of the received voltage control signal.

6. The system of claim 1, wherein the power amplifier is configured to generate the voltage control signal in a first state if the power levels of the signals transmitted by the remote base station indicate that the power amplifier operates in a low output power range.

7. The system of claim 1, wherein the power amplifier is configured to generate the voltage control signal in a second state if the power levels of the signals transmitted by the remote base station indicate that the power amplifier operates in a high output power range.

8. The system of claim 1, further comprising a 3dB hydrid coupler configured to receive the input signal from the input stage, send a first input signal to an input of the carrier amplifier, and send a second input signal to an input of the peak amplifier, the second input signal shifted in phase by approximately ninety degrees from the first input signal.

9. The system of claim 8, further comprising an output matching unit configured to receive an output signal from the peak amplifier and an output signal from the carrier amplifier to generate a substantially optimum power amplifier output power signal at an output stage.

10. The system of claim 9, wherein the output matching unit further comprises

a first quarter wavelength transformer coupled to a carrier amplifier output terminal; and

a second quarter wavelength transformer coupled to a peak amplifier output terminal, an output of the first quarter wavelength transformer, and the output stage.

11. A method for bias control of a power amplifier, comprising:

receiving signals transmitted by a remote base station;

generating a voltage control signal based upon power levels of the signals; and

biasing a peak amplifier of the power amplifier via the voltage control signal.

12. The method of claim 11, wherein the generating further comprises the step of generating the voltage control signal in a first state if the power levels of the signals indicate that the power amplifier operates in a low output power range.

13. The method of claim 12, wherein the voltage control signal in the first state biases the peak amplifier as a class B or a class C amplifier.

14. The method of claim 11, wherein the generating further comprises the step of generating the voltage control signal in a second state if the power levels of the signals indicate that the power amplifier operates in a high output power range.

15. The method of claim 14, wherein the voltage control signal in the second state biases the peak amplifier as a class AB amplifier.

16. A system for controlling a power amplifier in a mobile handset, comprising:

a carrier amplifier having a carrier input terminal and a carrier output terminal;

a peak amplifier having a peak input terminal, a peak output terminal and a control terminal for receiving a voltage control signal, the peak amplifier configured to vary at least one characteristic of the power amplifier based upon the voltage control signal;

a phase shifter, coupled to the carrier input terminal and the peak input terminal, for generating a peak amplifier input signal delayed in phase from a carrier amplifier input signal; and

an output matching unit, coupled to the carrier output terminal and the peak output terminal, for transmitting a carrier output power signal and a peak output power signal and forming a power amplifier output power signal at a power amplifier output stage.

17. The system of claim 16, further comprising a baseband modem chipset for receiving signals transmitted by a remote base station and generating the voltage control signal in a first voltage state if power levels of the received signals indicate that the power amplifier operates within a low power range and generating the voltage control signal in a second voltage state if the power levels of the received signals indicate that the power amplifier operates within a high power range.

18. The system of claim 16, wherein the phase shifter is a hybrid coupler for distributing certain input powers to the carrier amplifier and the peak amplifier.

19. The system of claim 18, wherein the hybrid coupler is a 3dB hybrid coupler implemented with lumped elements.

20. The system of claim 18, wherein the hybrid coupler is implemented by the Low Temperature Co-fired Ceramic (LTCC) method.

21. The system of claim 16, wherein the phase shifter is a phase difference compensator.

22. The system of claim 21, wherein the phase difference compensator is implemented with a transmission line.

23. The system of claim 21, wherein the phase difference compensator is implemented with lumped elements.

24. The system of claim 16, wherein the output matching unit is implemented with lumped elements.

25. The system of claim 16, wherein the output matching unit is implemented by a Low Temperature Co-fired Ceramic (LTCC) method.

26. The system of claim 16, wherein the at least one characteristic of the power amplifier is linearity.

27. The system of claim 17, wherein the peak amplifier further comprises a voltage control unit configured to receive the voltage control signal and control a bias current of the peak amplifier such that the power amplifier is operated as a Doherty-type amplifier when the voltage control signal is in the first voltage state and the peak amplifier is operated as a class AB amplifier when the voltage control signal is in the second voltage state.

28. The system of claim 16, wherein the output matching unit further comprises

a first transformer having an input coupled to the carrier output terminal and an output coupled to the peak output terminal; and

a second transformer having an input coupled to the output of the first transformer and an output coupled to the power amplifier output stage.

29. A method of operating a power amplifier in a wireless transmitting device in at least two modes, the power amplifier including a carrier amplifier and a peak amplifier, the method comprising:

generating a voltage control signal in a first voltage state if power levels of signals transmitted by a remote base station and received by the power amplifier indicate that the power amplifier operates within a low power range;

generating a voltage control signal in a second voltage state if the power levels of signals transmitted by the remote base station and received by the power amplifier indicate that the power amplifier operates within a high power range; and

biasing the peak amplifier via the voltage control signal.

30. The method of claim 29, wherein biasing further comprises the step of biasing the peak amplifier via the voltage control signal in the first voltage state to operate the power amplifier as a Doherty-type amplifier.

31. The method of claim 29, wherein biasing further comprises the step of biasing the peak amplifier via the voltage control signal in the second voltage state to improve a non-linearity characteristic of the power amplifier.

32. The method of claim 29, wherein biasing further comprises the step of biasing the peak amplifier via the voltage control signal in the second voltage state to operate the peak amplifier as a class AB amplifier.

33. A system of operating a power amplifier in a wireless transmitting device in at least two modes, the power amplifier including a carrier amplifier and a peak amplifier, the method comprising:

means for generating a voltage control signal in a first voltage state if power levels of signals transmitted by a remote base station and received by the power amplifier indicate that the power amplifier operates within a low power range;

means for generating a voltage control signal in a second voltage state if the power levels of signals transmitted by the remote base station and received by the power amplifier indicate that the power amplifier operates within a high power range; and

means for biasing the peak amplifier via the voltage control signal.

34. The system of claim 33, wherein means for biasing further comprises means for biasing the peak amplifier to operate the power amplifier as a Doherty-type amplifier if the voltage control signal is in the first voltage state.

35. The method of claim 33, wherein means for biasing further comprises means for biasing the peak amplifier to improve a non-linearity characteristic of the power amplifier if the voltage control signal is in the second voltage state.